Current Recommendations for the Treatment of Diabetic Eye Disease

THE EARLY TREATMENT OF DIABETIC RETINOPATHY STUDY (ETDRS), a National Eye Institute-supported, multicenter, randomized clinical trial, has shown that photocoagulation therapy for diabetic macular edema substantially reduces the risk of loss of vision. Macular edema is a leading cause of vision loss in patients with diabetes mellitus and occurs in approximately 10% of the diabetic population. It results from fluid leakage from microaneurysms and defective retinal vessels with subsequent retinal thickening and hard exudate formation within the macula. Data from the ETDRS show that focal photocoagulation of "clinically significant" macular edema reduces the risk of vision loss by more than 50%. Laser treatment also increases the chance of visual improvement, decreases the frequency of persistent macular edema, and is not accompanied by any major adverse effects. Of note is that the benefits of treatment occur regardless of the level of visual acuity at the time of treatment. As a result, even diabetic persons with normal vision may have macular edema that should be considered for photocoagulation therapy.

The ETDRS also investigated the question of optimal timing for panretinal photocoagulation therapy. The results of the study had shown that panretinal photocoagulation substantially reduced the risk of blindness resulting from the high-risk proliferative states of diabetic retinopathy. The ETDRS results confirm that panretinal photocoagulation therapy reduces the risk of severe vision loss. In addition, investigators found that the benefits of treatment occur whether such therapy is given "early" or deferred until high-risk proliferative retinopathy occurs.

Finally, aspirin treatment was studied to determine whether it was effective in altering the course of diabetic retinopathy. The ETDRS results showed that a dose of 650 mg a day did not prevent the development of high-risk proliferative retinopathy. In addition, aspirin therapy had no effect on vision and did not increase the risk of vitreous hemorrhage.

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Using Fluorouracil in Surgical Therapy for Glaucoma

INCREASED INTRAOCULAR PRESSURE is strongly correlated with the risk of glaucomatous optic nerve damage. Current glaucoma therapy involves lowering the pressure to a level that is compatible with preserving the integrity of the optic nerve. This level may vary from patient to patient. Factors such as family history, race, myopia, and diabetes mellitus play a role in increasing the risk of damage from elevated pressures. The efficacy of therapy is determined by careful monitoring of the optic nerve appearance and by repeated measurement of the field of vision. When progressive damage continues to occur despite maximum medical therapy, a glaucoma-filtering operation may become necessary to further lower the intraocular pressure.

In glaucoma-filtering operations, a drain site connecting the anterior chamber and the episcleral space is fashioned at the junction between the cornea and sclera. This drain, which is covered by an outer coat of conjunctiva, creates a pocket or bleb into which aqueous humor flows. By directing aqueous from the inner eye into a new tissue space, the drain effects a persistent lowering of the intraocular pressure.

The average success rate of glaucoma-filtering surgical procedures in previously unoperated eyes is 75% to 85%. Although often successful initially, with time a significant number of filters fail. This occurs as a result of the normal healing response. Fibroblast proliferation at the operative site can lead to scarring, closure, and functional failure of the filter. It is thought that pharmacologic modulation of this healing response, with suppression of scarring, could improve filtering bleb survival.

Recently investigators in a large, prospective, randomized multicenter study reported a substantial improvement in the results of glaucoma filtration surgical procedures with the postoperative use of fluorouracil. All patients enrolled in the study were at a high risk for failure, having either undergone previous filtering surgical procedures or cataract extraction. The fluorouracil was injected subconjunctivally for two weeks after the filtering operation; 73% of treated versus 50% of untreated patients had successful outcomes at one year. Complications were reported but thought to be at an acceptable level.

Although earlier pilot studies showed that adjunct fluorouracil was of possible benefit in patients with a poor prognosis, clinical use has not yet been widespread. This large, well-controlled study validates the use of this agent in defined high-risk patients undergoing glaucoma filtration procedures. Through inhibition of fibroblast proliferation and scarring in the region of the surgical drain site, this therapy allows for a greater chance of continued aqueous filtration and control of intraocular pressure.

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The Dilemma of Neonatal Ophthalmic Prophylaxis

THE MOST FREQUENT CAUSE of neonatal infectious conjunctivitis today is no longer gonorrhea but chlamydia. This sexually transmitted disease caused by *Chlamydia trachomatis* is increasing rapidly in incidence (at least 3% annually) and, in addition to conjunctivitis, can cause pneumonia in infants.

While many states require silver nitrate to be the sole prophylactic antimicrobial medication, in as many as 90% of infants the medication itself induces a toxic conjunctivitis producing redness, edema, and a watery or purulent discharge. This reaction can be confused with gonococcal conjunctivitis, the very disease this agent was used to prevent.

Some states, such as California, will permit an agent other than silver nitrate to be used if it is effective. Because of the toxic conjunctivitis associated with using silver nitrate and its assumed ineffectiveness against chlamydia, many hospitals began using topical erythromycin or tetra-